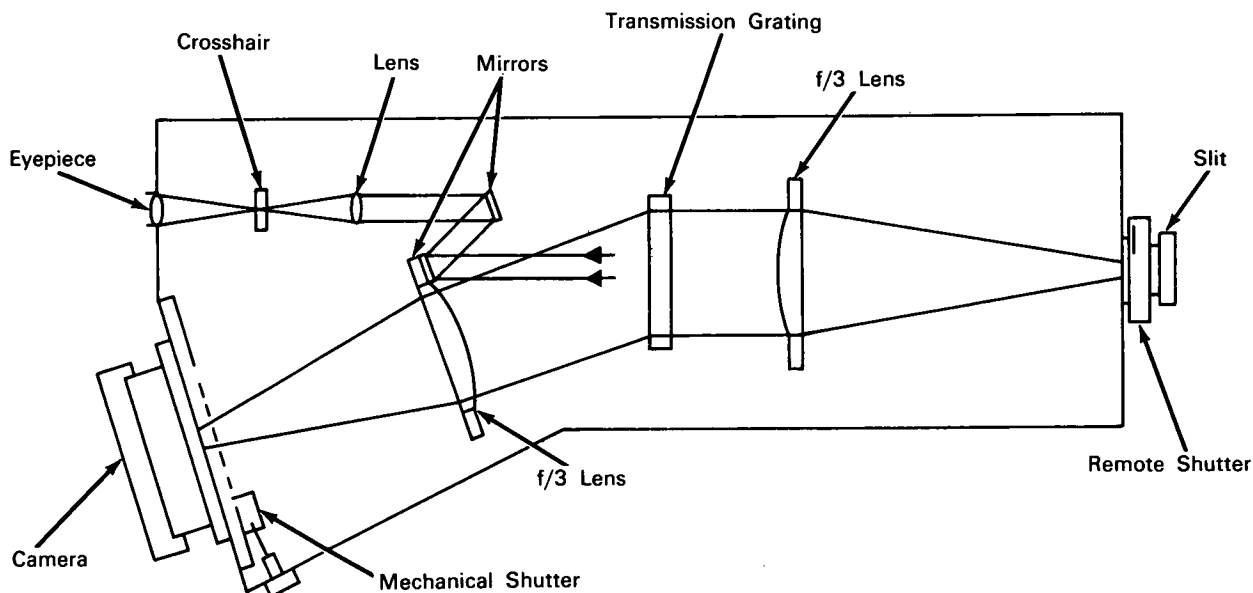


# NASA TECH BRIEF



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## Simple Optical System Used to Align Spectrograph



**The problem:** A need for obtaining quick, moderately resolved spectra of a multitude of light sources resulted in the development of a survey spectrograph. To be effective, the instrument had to be optically fast, portable, and easily aligned to the source under investigation.

**The solution:** A small, lightweight spectrograph that incorporates auxiliary optics in a boresight technique to use the "zero" order of the grating for visual alignment to the source.

**How it's done:** The "zero" order of the grating is displaced by two flat mirrors and then imaged on the crosshair for alignment with the eyepiece. A mechanical shutter in front of the camera is used to protect

the film from exposure during alignment, since the remote shutter is open and the source is illuminating the grating. This boresight technique enables the operator to verify the proper illumination of the slit, which basically assures proper alignment to the source. In the slitless mode, a complete view of the source is merely centered in the crosshair and alignment of the spectrograph is complete.

### Notes:

1. The transmission grating is scribed with 600 grooves per millimeter on an 84- by 84-millimeter area. The grating, used in the first order, gives a linear reciprocal dispersion of 71 Angstroms per millimeter. Over a wavelength range of 3500 to 6500 Angstroms, resolution of 5 Angstroms has been obtained using a 30-micron slit.

(continued overleaf)

2. Inquiries concerning this invention may be directed to:

Technology Utilization Officer  
Langley Research Center  
Langley Station  
Hampton, Virginia, 23365  
Reference: B65-10071

**Patent status:** NASA encourages the immediate commercial use of this invention. Inquiries about obtaining rights for its commercial use may be made to NASA, Code AGP, Washington, D.C., 20546.

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